1963

An Analysis of Wechsler Adult Intelligence Scale (WAIS) Profiles in Acute and Chronic Schizophrenics

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AN ANALYSIS OF WECHSLER ADULT INTELLIGENCE SCALE(WAIS) PROFILES IN ACUTE AND CHRONIC SCHIZOPHRENICS

BY

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A Thesis Submitted to the Faculty of the Graduate School
of Loyola University in Partial Fulfillment of
the Requirements for the Degree
Master of Arts

JULY, 1963

LIFE

The author was born in Evanston, Illinois on October 3, 1937. He attended grammar school at Morton Grove Public School, graduating in June, 1951. In June, 1955, he graduated from Niles Township High School in Skokie, Illinois. College undergraduate work was begun at the University of Illinois. After one and one-half years, the author transferred into Lake Forest College and received his B.A. degree in June, 1959. Following a year of work, the author began his graduate study in psychology at Loyola University in September, 1960.

ACKNOWLEDGEMENTS

The author wishes to express his appreciation to his advisor, Dr. Paul Von Ebers, and all members of his thesis committee for their guidance and effort, which aided the writer in carrying out this study.

Many thanks are also due to Dr. Dennis Kamano, Chief Psychologist of the Galesburg State Research Hospital, for his suggestions and encouragement, which were most helpful in the culmination of this project.

The author is also grateful to Dr. Thomas T. Tourlentes, Superintendent of Galesburg State Research Hospital, who was most generous in allowing access to hospital records and the time that made it possible to carry out this study.

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CHAPTER I

INTRODUCTION

In their search for more and better diagnostic tools, clinicians are prone to look for information in a wide variety of sources, even in places which have not been specifically designed for this purpose. The intelligence tests, for instance, have traditionally been fruitful and much used sources of diagnostic information. Although the subject's level of intellectual functioning is the primary concern when an intelligence examination is administered, valuable time and effort are wasted should the clinician fail to utilize other information presented that would enrich his knowledge of the subject. Quite often, the subject conveys a wealth of information about himself through the manner in which he approaches the various intellectual tasks, his reactions to test stimuli, his reactions to success and failure, the quality and flavor of his verbal expression, and so on. These qualitative elements have always, more or less, been observed, interpreted and incorporated into the total body of information the clinician gathers on a particular subject. But, in addition to this type of information, it would be of interest and would no doubt prove useful if diagnostic data could also be obtained from factors presented by the various elements of the test itself, that is, the quantitative aspects.

Wechsler was well aware of this possibility when, in the third edition of the Measurement of Adult Intelligence(1944), he outlined a method whereby the Wechsler Bellvue Intelligence Scale(W-B) could be used as a diagnostic

aid. From his experience, typical subtest patterns were found which seemed to correspond with various diagnostic categories. Over the years, these proposals have stimulated numerous studies which have attempted to validate this analysis of subtest patterns or to find other empirically based patterns which corresponded to the various clinical entities. In these studies, both the W-B and the newer Wechsler Adult Intelligence Scale(WAIS) have been employed.

For the most part, research in this area has failed to show any consistent and significant findings which could be deemed useful to the practicing clinician. In reviewing the Wechsler scales, Cronbach(1960) concluded that the secondary hope that patterns of subtest scores would provide a ready means of clinical diagnosis has not, as yet, been realized; empirical evidence has, so far, shown pattern analysis to have little validity.

Guertin et al(1962) drew similar conclusions in their review article covering the last five years research on the Wechsler scales. They found that although research has shown pattern analysis to significantly differentiate normals from clinical groups, attempts to differentiate among the clinical groups have generally been unsuccessful. However, they suggest that this failure to yield promising results does not necessarily imply that the Wechsler scales have no potential in this area. The lack of significant findings might instead be due to certain methodological shortcomings of the research which has been done. One of these shortcomings is that most of the studies have failed to distinguish between a mean diagnostic group profile and modal patterns of homogeneous subjects within each diagnostic group.

Although each sample has only one mean group profile, within the sample there may be several groups, each forming a cluster of homogeneous symptoms with different modal patterns.

As an approach to more fruitful research, they recommended that a particular diagnostic group, such as schizophrenia, be treated as a heterogeneous group. Thus, WAIS subtest patterns of schizophrenics could be compared on the basis of chronic vs. acute, reactive vs. process, or short-term vs. long-term. In defense of this suggestion, they point to recent literature suggesting the existence of a process-reactive dichotomy or continuum within the total schizophrenic population(Becker, 1956; Jackson, 1960; Kantor et al, 1953; Zimet and Fine, 1959). In addition, many studies which compared prognostically dissimilar groups of schizophrenics, reported findings indicative of differential performance on intellectual tests(Carp, 1950; Harris and Metcalfe, 1956; Harris and Metcalfe, 1959; Rabin et al, 1955; Rappaport 1951; Rappaport, 1953; Rappaport and Webb, 1950; Stotsky, 1952). Where differences have been found, however, it is noted that no attempt was made to match subjects in terms of general intellectual level. This raises the question of whether the obtained differences are, in fact, due to the influences of personality variables and modes of thinking and problem solving which characterize one or the other extreme of the assumed schizophrenic dichotomy. Other possibilities are that the differences are more realistically a function of premorbid intellectual differences, or they might be attributable to the gross intellectual deterioration typical of chronic schizophrenics. Furthermore, the studies which have been done in this area have rarely employed either the full scale W-B or WAIS, and have thus,

contributed little to the problem of profile analysis.

The present study represented an attempt to explore this area more thoroughly. The purpose of the study was to investigate what, if any, quantitative differences in WAIS scores could be found which significantly differentiated acute and chronic schizophrenic patients who were matched in terms of general intellectual level. Analysis of subtest profile differences was the primary interest. It was felt that studies of this type might yield valuable information which could increase the acuity of pattern analysis for diagnostic purposes. Should the WAIS have a potential use in this area, investigation of such would be most worthwhile in light of the widespread use of the instrument in clinical settings.

CHAPTER II

REVIEW OF THE LITERATURE

The bulk of the studies on the WAIS and W-B have been concerned with developing diagnostic patterns or with validating those proposed by Wechsler in the third edition of the Measurement of Adult Intelligence(1944). For the most part, these studies have attempted to find relationships between broad nosological categories and the various aspects of the intelligence test. Many of these studies have been primarily concerned with establishing specific subtest patterns which would discriminate between schizophrenics and other diagnostic groups. There have also been some attempts to seek relationships between test factors and various aspects of presumably homogeneous groups, such as schizophrenia. Since these latter studies are more directly related to the purpose of this study, and are, therefore, more pertinent to the task at hand, they obviously comprise the central theme of this discussion of related literature. But, before focusing on this area, a consideration of some of the ideas and studies which more or less historically preceded and influenced this research direction seems in order.

In the third edition of the Measurement of Adult Intelligence(1944, p. 146), Wechsler suggested that

> . . . although the primary purpose of an intelligence examination is to give a valid and reliable measure of the subject's global intellectual capacity, it is reasonable to expect that any well conceived intelligence scale will furnish its user with something more than an I.Q. or M.A. . . At present, the amount of this adjuvant data which may be derived from an intelligence examination

> is in a large measure dependent upon the individual examiner's clinical experience and sagacity. No doubt this will always remain true to a greater or lesser degree. But much also depends upon the intrinsic merits and diagnostic possibilities of the tests themselves.

Wechsler then discussed the advantages of the W-B, having neat and clear subdivisions between Verbal and Performance I.Q.'s and between the 11 subtests, each of which is purported to tap specific areas of ability, and the possibilities offered by such in the area of diagnostic evaluation. He then suggested typical findings in relation to various diagnostic categories derived from his own clinical experiences, one of these being schizophrenia. The same general line of reasoning is found in his later book, the Measurement and Appraisal of Adult Intelligence(1958), published after the revision of the W-B froms into the WAIS. In both books he offered what he found to be characteristics of the test performance of schizophrenics in general, based on deviations of the weighted subtest scores from the mean of these scores. Many authors, stimulated by Wechsler's proposals, have endeavored either to establish the validity of these patterns or have sought to arrive at other relationships between the various quantitative factors in the test and nosological categories. Some of the studies will be reviewed.

Garfield(1948) compared a group of 67 schizophrenics with a control group of 46 nonschizophrenics on the basis of frequency of the intervals of deviation of W-B subtests. In this study, the subtest deviations of each protocol from the mean of the weighted scores of that protocol were computed and put into a frequency distribution having interval values equal to the $+ +$, $+$, 0, $-$, and $- -$ intervals of Wechsler(1944). The two groups were compared on the frequency of deviations for each subtest. The only really significant differences found were on the Block Design subtest, where the schizophrenic

who were directed to classify each case. A significant number of profiles was correctly classified by only one of the 7 psychologists(132 out of 300) and only two others achieved above-chance success in the diagnosis of a single diagnostic group, this being the brain-damaged group in both cases. Correlations between classifications for all 7 psychologists and the established diagnosis ranged from .13 to .33, which was deemed far too small to be clinically useful. The author concluded that although there is some nonchance relationship between the W-B patterns and clinical diagnosis, it seems to be of such small degree as to have little practical value.

A factor analytic approach was taken to seek possible relationships between W-B subtest scores and diagnosis by Frank(1956). The W-B subtest scores of 60 subjects from 9 diagnostic groups were correlated and factor analyzed. Only two unrotated factors were isolated, these being Verbal I.Q. and Performance I.Q. The results clearly suggested that the hypotheses underlying the use of the W-B as a diagnostic tool in a psychiatric setting must be seriously questioned. The authors concluded that the Wechsler scales seem not to distinguish subjects in terms of psychiatric characteristics, emotional maladjustments, psychosis or neurosis, or individual diagnostic categories, but in terms of intellectual factors only.

In spite of a great deal of research in this area, the situation has changed little regarding W-B or WAIS psychometric patterns in schizophrenia, in that very little of a positive nature relative to diagnosis of this disorder has been produced(Binder, 1956; Cohen, 1955; Cronbach, 1960; Frank, 1956; Garfield, 1948; Garfield, 1949; Guertin et al, 1955; Guertin et al, 1962; Rabin and Guertin, 1951; Rabin and King, 1958; Trehub, 1958).

In their article reviewing the literature on the Wechsler scales, Guertin et al(1962) suggest that this failure might be due to factors other than the characteristics of the test itself, such as methodological inadequacies. In particular, they point to:

> . . . the failure to distinguish between a mean diagnostic group profile and modal patterns of homogeneous subjects in a diagnostic group. While there is only one mean group profile for a sample, several groups of the subjects may form clusters of homogeneous symptoms with rather dissimilar modal patterns. Furthermore, the group profile cannot be expected to conform to any of the modal patterns since it is a statistic and no single subject should be expected to correspond to the mean group profile. Only modal patterns are appropriate for diagnostic purposes. Wechsler(1944) fails to identify the nature of his proposed diagnostic patterns. Since only one is given for each diagnostic group it seems likely that he has proposed the relatively useless profile; at least this is presumed by most investigators in checking the validity of his proposals. Only a clear understanding of these simple principles can lead to a respectable research approach to diagnostic pattern analysis(p. 19).

They follow with recommendations that researchers select a specific frame of reference in determining samples, such as chronicity vs. acuteness or reactive vs. process in the case of schizophrenia. Actually, many studies have already been done in this area. Although most of them have not been concerned with developing W-B or WAIS profiles, they have at least attempted to establish relationships between performance on intellectual tasks and various prognostic criteria.

Several studies have compared intelligence test performance with response to some kind of therapy. Hiler(1958) evaluated the W-B as a predictor of continuation in psychoanalytically oriented psychotherapy by comparing the performance of patients discontinuing therapy within 5 sessions with that of patients remaining in treatment for at least 20 sessions. The latter group was found to perform significantly higher on Full Scale I.Q. and the

Similarities subtest, but lower on the Digit Span and Digit Symbol subtests. The W-B records of 42 schizophrenics were compared with their response to insulin shock therapy by Carp(1950). Of the 16 patients who improved, none had a pretreatment Full Scale I.Q. lower than 95, while 14 of the 26 patients who did not improve had obtained pretreatment Full Scale I.Q.'s lower than 95.

A number of studies are reported which attempt to relate intellectual factors with various aspects of behavior. Rappaport and Webb(1950) compared scores on a vocabulary test with ratings of behavioral accessibility, as measured by the Elgin Test Reaction Scale(ETRS), in a group of 10 schizophrenics. A correlation of .64 was obtained between I.Q. and behavioral accessibility. The same study was repeated by Rappaport(1951) with 256 schizophrenics. The ETRS rating of behavioral accessibility was found to correlate .98 with a vocabulary test I.Q. measure. Rappaport(1953) also compared the W-B test performance of 85 schizophrenics with ETRS ratings of behavioral accessibility. More severe disturbances in behavior were associated with lower scores on the Vocabulary, Information and Digit Span subtests. Harris and Metcalfe(1956) evaluated quality of affect and prognosis of 40 schizophrenic patients in relation to their performance on a battery of tests, including the W-B, Nufferno speed test, Nufferno levels test, an analogies test, an essential differences test, an absurdities test and a proverbs test. Ratings on affect divided the subjects into 3 groups displaying "grossly flat" affect, "moderately flat" affect and "no flatness". Only the Nufferno speed test and the timed W-B subtests were found to differentiate between the groups. Flatness of affect and poor prognosis were associated with lower scores where speed was required. In a later study, Harris and Metcalfe(1959) again found

inappropriateness of affect to be related to slower performance on the Nufferno speed test.

The studies reported so far which have compared aspects of behavior with intellectual factors have all shown positive results. Several studies are reported that failed to find significant relationships between these variables. Kasper(1958) compared the scores of 50 mental hospital patients on the WAIS Vocabulary subtest and Progressive Matrices scores with ratings of morbidity. No meaningful relationships were found between estimates of intellectual functioning and ratings of morbidity. Ratings of social adjustment of mental hospital patients receiving psychotherapy were correlated with W-B Full Scale I.Q. scores by Rioch and Rubin(1959). The relationship between this prognostic criterion and test performance was found to be insignificant. Senf et al(1955) compared the performance of 24 chronic schizophrenics, 22 acute schizophrenics, 21 depressives and 21 neurotics on the Army Alpha test with a 90 second time limit and then with no time limit. When there was no time limit, no significant differences were found. With a time limit, neurotics scored significantly higher than the 3 psychotic groups, although the latter groups did not differ among themselves.

There have been several studies which have attempted to find relationships between aspects of intelligence and length of hospitalization. Rabin et al (1955) compared 25 normals, 25 short-term schizophrenics and 25 long-term schizophrenics on the basis of their performance on the W-B Vocabulary subtest. They found that although normals and short-term schizophrenics did not differ, significant differences were obtained between these two groups and long-term schizophrenics, with lower performance being manifested by the latter group.

Long and short-term schizophrenics were compared in terms of their performance on the Nufferno speed test by Harris and Metcalfe(1959). Slower performance was found to be related to longer duration of illness. Stotsky(1952) compared the Full Scale W-B I.Q.'s of 88 schizophrenics with length of hospitalization. Fourty-four of these had remitted and gone home after 6 months, while 44 remained hospitalized. The remitted group had obtained significantly higher Full Scale I.Q.'s. From a large group of schizophrenic patients, Trapp and James(1937) found 41 who had taken the Stanford-Binet Intelligence Scale(S-B) on admission and who had remained in the hospital without any remission from 4 months to 13 years. Retesting each subject with the S-B and comparing the results with I.Q.'s at the time of admission, they found a significant relationship between length of illness and decline in I.Q.

With a few exceptions, the results of previous studies support the clinical observation that chronic schizophrenics perform less well on intellectual tasks than acute schizophrenics. However, there is little indication that there is a differential impairment of cognitive functions in the form of different techniques or modes of handling intellectual tasks. Nor is there any real evidence that there are specific areas of intellectual superiority or inferiority which are peculiar to one extreme of schizophrenia as opposed to another. The findings do seem to indicate, as pointed out by Payne(1960), that differences might, to some extent result from the mental and motor slowness or lack of motivation on the part of the chronic schizophrenic.

It is also very likely that chronicity in schizophrenia is associated with lower premorbid intelligence. Vocabulary measures of I.Q. are generally

considered to resist the effects of mental illness and deterioration(Rapaport et al, 1946; Wechsler, 1958). Yet, several studies report significantly lower vocabulary test scores for schizophrenics having an unfavorable prognosis (Rabin et al, 1955; Rappaport, 1951; Rappaport, 1953; Rappaport and Webb, 1950). This clearly suggests that many of the studies purporting to compare acute with chronic schizophrenics on intellectual tasks have actually been comparing groups which are relatively dissimilar in terms of general intellectual level. Although this information is useful in that it provides evidence for differences between acute and chronic schizophrenics as groups, there remains a lack of information regarding differential impairment in these two groups when differences in intellectual level and the effects of gross deterioration are ruled out. Thus far, it seems that researchers have been reluctant to compare prognostically dissimilar groups that are matched in terms of general intellectual level, because at first glance it appears that the test variable is being controlled. However, in searching for WAIS profiles which will discriminate acute and chronic schizophrenics, this method seems to represent the most suitable approach.

CHAPTER III

METHOD

The purpose of this study was to determine what quantitative differences in WAIS scores could be found which would significantly differentiate acute from chronic schizophrenics. The major interest, of course, was to investigate whether any subtest profile differences would emerge that would permit discrimination between the two groups.

Subjects

The subjects were 50 schizophrenics who had taken the Full Scale WAIS at the time of their admission to Galesburg State Research Hospital. For each subject the diagnosis of schizophrenia had been established at a diagnostic staff conference shortly after admission and was determined on the basis of psychiatric evaluation, psychological evaluation(based on a battery of tests), and social history.

The subjects comprised two groups: 25 acute schizophrenics and 25 chronic schizophrenics. The two groups were matched in terms of: age(when WAIS was administered), education, Full Scale WAIS I.Q.(see discussion below), sex, race and socioeconomic status. State mental hospital patients generally have lower to lower-middle class backgrounds(Greenblatt et al, 1955), which was found to be characteristic of the patients in this sample. Table I summarizes the information on the subjects of this study. Complete data on all subjects are reported in Appendix A.

TABLE I

SUMMARY AND COMPARISON OF PERSONAL DATA ON SUBJECTS

	Acute	Chronic	t*
Age			
M	29.48	29.20	.129
S.D.	4.86	5.36	
Range	16-41	17-42	
Education			
M	11.16	11.56	.536
S.D.	2.63	2.53	
Range	6-16	7-16	
Full Scale I.Q.			
M	96.80	95.56	.647
S.D.	11.95	12.11	
Range	74-124	72-121	
Sex			
Male	12	12	
Female	13	13	
Race			
White	23	24	
Negro	2	1	

*t values are not significant.

Criterion for differentiating between acute and chronic schizophrenics were the following. Acute schizophrenics were defined as subjects who had spent not more than one year in mental institutions and who were not mental hospital patients at the time of this study, because they had previously been discharged. Decisions on whether a patient is to be discharged or not were made by a discharge staff or team consisting of a psychiatrist, psychologist, social worker, nursing personnel, attendants and others who had had contact with the patient. Thus, the fact that a patient was discharged indicated that those professional people familiar with his case considered his prognosis to be favorable. Chronic schizophrenics were defined as subjects who had spent more than two years in mental hospitals and who at the time of this study were still patients at Galesburg State Research Hospital. The fact that they have spent considerable time as mental hospital patients and have not been considered for discharge, together with the probability that they would generally remain hospitalized for some time, rendered their prognosis unfavorable(Bellak, 1958).

In order to rule out the possibility of the results being distorted by differences in premorbid intellectual level and by the general intellectual deterioration noted in many chronic schizophrenics, the groups were matched in terms of Full Scale WAIS I.Q. Since the objective of this study was to investigate WAIS profile differences, matching the groups in terms of general intelligence was quite important. If matching on this variable had not been done, comparison of subtest scores would have been rather meaningless because chronic schizophrenics, as a group, are known to perform at a lower intellectual level than acute schizophrenics. What is common knowledge was readily supported by the difficulties encountered in selecting the present

sample. It was found that, as a group, those subjects who qualified for the chronic schizophrenic group had lower intelligence that those who qualified for the acute schizophrenic group. In matching in terms of Full Scale I.Q., therefore, it was necessary to exclude from the sample many of the intellectually brighter acute schizophrenic subjects, as well as many of the intellectually duller chronic schizophrenic subjects.

Procedure

The results of the study were treated statistically by means of the t-test. Comparisons were made between the means of acute and chronic schizophrenics on the 11 subtests and on the sums of the weighted scores for the three I.Q. scales. Because a particular I.Q. figure frequently represents several weighted score values, the latter figures were considered more appropriate for comparison. In addition to the t-test, Hartley's F Max test was also run on the 14 variables mentioned above to determine whether the groups differed significantly in terms of variability.

Because WAIS scores have been found to reflect sex differences(Guertin et al, 1962; Wechsler, 1958), it was felt necessary to determine whether there were any significant differences in the results which could be attributable to this variable, and which might have distorted the results obtained for comparisons based on acuteness and chronicity. To test for the possible effects of sex, the t-test and Hartley's F Max test were run between males and females in the chronic schizophrenic group on all 14 major test variables.

CHAPTER IV

RESULTS

The results of the study are summarized in Table II. Presented are the means and standard deviations on the 11 subtests and 3 I.Q. scales for the acute and chronic schizophrenic groups. Also shown are the t and F values obtained in comparing the two groups. A graphic presentation of the results, showing a comparison of the subtest profiles for the two groups, is provided in Figure 1. Appendix B contains the complete data from which the results are derived.

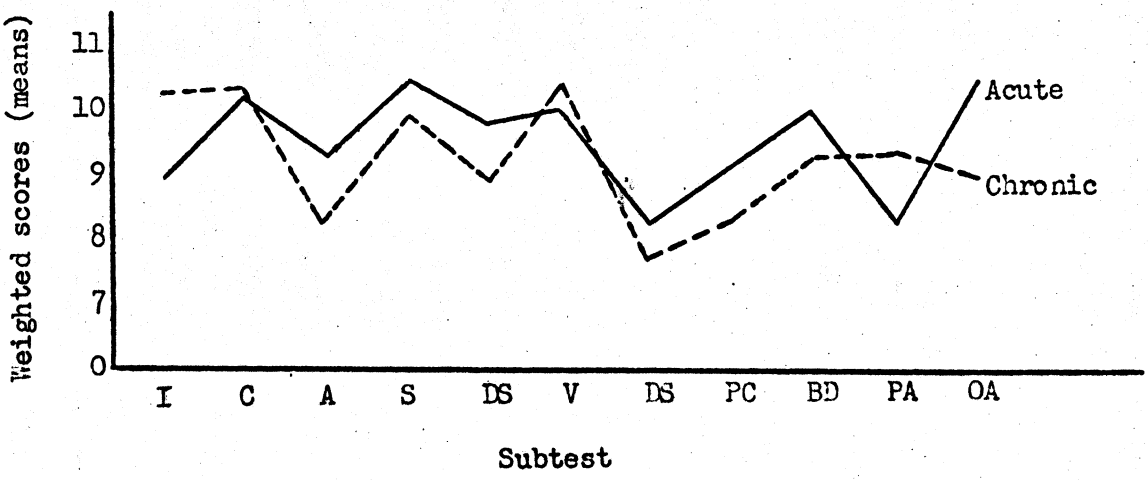

FIGURE 1

COMPARISON OF SUBTEST PROFILES OF ACUTE AND CHRONIC SCHIZOPHRENICS

Referring to Table II, it can be seen that in comparing acute and chronic schizophrenics in terms of quantitative aspects of the WAIS, no significant differences were found between means or variances on any of the test variables. An examination of Figure 1 shows that the acute schizophrenic group obtained

TABLE II

COMPARISON OF ACUTE AND CHRONIC SCHIZOPHRENICS ON THE WAIS

	Acute		Chronic			
	M	S.D.	M	S.D.	t*	F*
Information	8.840	2.603	10.160	2.445	1.857	1.133
Comprehension	10.080	3.346	10.360	3.122	.307	1.149
Arithmetic	9.160	2.493	8.200	3.237	1.104	1.686
Similarities	10.440	2.368	9.800	2.577	.893	1.184
Digit Span	9.640	2.897	8.880	3.011	.893	1.080
Vocabulary	9.920	2.756	10.320	3.043	.470	1.219
Digit Symbol	8.080	2.637	7.600	2.417	.657	1.190
Picture Completion	8.960	2.088	8.160	2.618	1.170	1.572
Block Design	9.760	2.735	9.040	2.690	.920	1.034
Picture Arrangement	8.120	2.846	9.040	3.316	1.038	1.373
Object Assembly	10.160	2.962	8.680	2.867	1.801	1.067
Verbal Scale	58.080	12.301	57.720	12.523	.316	1.036
Performance Scale	45.080	9.711	42.520	10.052	.897	1.071
Full Scale	103.160	20.238	100.240	19.083	.505	1.044

*None of the t and F values are significant.

somewhat higher means on the Arithmetic, Similarities, Digit Span, Digit Symbol, Picture Completion, Block Design and Object Assembly subtests. The chronic schizophrenic group had higher means on the Information, Vocabulary and Picture Arrangement subtests. Table II shows that the means of the acute schizophrenic group on the Verbal, Performance and Full scales were slightly higher than those of the chronic schizophrenic group. These differences probably account for the somewhat higher means of the acute schizophrenic group on most of the subtests. Although some differences were found, they were not large enough to be of any significance or to result in any discriminative profiles.

In testing for the possible effects of sex differences, it was found that this variable did not significantly influence the results of the study. The reader is referred to Appendix C for additional information on this subject.

Although no statistical analyses were performed to determine if any relationships were present between age and WAIS scores, and between Full Scale I.Q. and differences in scale scores, inspection of the raw data fails to reveal any tendencies indicating a significant influence on the results for either of these factors.

CHAPTER V

DISCUSSION

The major conclusion suggested by the results of this study is that when acute and chronic schizophrenics are matched in terms of general intellectual level, comparison of their WAIS scores fails to reveal any discriminative profiles which permit differentiation of the two groups. Further, the results rather blatantly suggest that research on profile analysis with the WAIS holds little promise, since it has failed to distinguish between major diagnostic groups(Guertin et al, 1962) and as in this case, has failed to show significant results even when samples are refined. This failure results either from the inability of the WAIS to tap those areas of differential impairment of cognitive functioning which are peculiar to one group or another, or that the groups compared in this study actually did not differ in this respect.

Because the WAIS records of the present sample were obtained on admission, it is possible that the effects of deterioration which might currently be manifest in some subjects, were not present at the time they were tested. In many of the studies which reported significant differences between acute and chronic schizophrenics, the intelligence tests were administered at the time these studies were done(Harris and Metcalfe, 1956; Harris and Metcalfe, 1959; Rabin et al, 1955; Rappaport, 1951; Rappaport, 1953; Rappaport and Webb, 1950). But, since decrement in performance on intelligence tests seems to be related to length of hospitalization(Trapp and James, 1937), it is probable that this

factor has significantly influenced the results of these studies, and that the present sample was relatively free of deteriorated cases. There is evidence that acute schizophrenics perform better than chronic schizophrenics on tasks requiring motor and mental speed(Harris and Metcalfe, 1956; Harris and Metcalfe, 1959; Payne, 1960), which seems to account for much of the deterioration manifested by the latter group. Thus, acute schizophrenics would be expected to obtain higher scores on the timed subtests of the WAIS. That this is contrary to the results of the present study is further indication that deterioration was not a significant factor.

The difficulty encountered in matching the two groups of the present sample in terms of intellectual level readily suggests that, as groups, acute schizophrenics are intellectually superior to chronic schizophrenics. This observation is substantially supported by the bulk of the studies comparing prognostically dissimilar groups of schizophrenics(Carp, 1950; Harris and Metcalfe, 1956; Harris and Metcalfe, 1959; Rabin et al, 1955; Rappaport, 1951; Rappaport, 1953; Rappaport and Webb, 1950, Stotsky, 1952). However, none of these studies have attempted to match groups in terms of general intellectual level and there is thus, some suggestion that the areas of differential impairment noted for the prognostically unfavorable schizophrenics might, to some extent, be a function of premorbid intellectual differences rather than differences resulting solely from the effects of chronicity. There is evidence that schizophrenics as a group tend to have lower premorbid intelligence than the general population(Mason, 1956; Payne, 1960). Extending this notion, it seems reasonable to expect chronic schizophrenics to have lower premorbid intelligence than acute schizophrenics. This is supported by

several studies in which chronic schizophrenics were found to perform lower on vocabulary measures of intelligence than acute schizophrenics(Rabin et al, 1955; Rappaport, 1951; Rappaport, 1953; Rappaport and Webb, 1950). Since vocabulary I.Q. measures are generally considered to resist the effects of mental illness and deterioration(Rapaport et al, 1946; Schafer, 1948; Wechsler, 1958), it appears likely that such differences reflect premorbid intellectual differences as much as they reflect chronicity. Also, in several studies with the WAIS, the results of comparisons based on Vocabulary subtest scores were found to agree with comparisons based on general intelligence (Kasper, 1958; Rappaport, 1953). Thus, it seems probable that unlike the results of other studies, the findings of the present one seem to be relatively uninfluenced by premorbid intellectual differences, this being evidenced by the lack of difference between the two groups on Vocabulary subtest scores.

In conclusion, it seems that many of the differences in intellectual performance found between acute and chronic schizophrenics have been greatly influenced by the effects of deterioration and premorbid intellectual differences. When the influence of these two factors is reduced, the two groups do not show any differences in intellectual functioning; at least any differences which might exist are not manifested in WAIS performance. This suggests the seeming futility of hopes that the WAIS could provide a ready means of diagnosis, since, at best, the evidence indicates that profile analysis might be successful in differentiating deteriorated from non-deteriorated subjects. However, research indicates that even this endeavor has not consistently produced the expected results(Guertin et al, 1962).

CHAPTER VI

SUMMARY

The purpose of this study was to compare acute and chronic schizophrenics who were matched in terms of general intellectual level on the quantitative aspects of the WAIS, in order to determine whether discriminative subtest profiles could be found for the two groups. An acute schizophrenic was defined as one who had spent not more than one year in mental hospitals and whose status at the time of the study was that of being discharged. A chronic schizophrenic was one who had spent more than two years in mental hospitals and whose status at the time of the study was that of still being hospitalized. A group of 25 acute schizophrenics was matched with a group of 25 chronic schizophrenics in terms of Full Scale WAIS I.Q., age, education, sex, race and socioeconomic status. All subjects had taken the Full Scale WAIS on admission. Comparisons were made between the groups by means of the *t*-test and Hartley's *F Max* test on the 11 subtests and on the Verbal, Performance and Full scales. No significant differences were found between acute and chronic schizophrenics on any of the test variables. The slight differences that did result failed to yield discriminative subtest profiles.

APPENDIX A

PERSONAL DATA ON SUBJECTS

	Acute Schizophrenics						Chronic Schizophrenics					
Subject	Age	Ed.	IQ	Sex	Race	Time*	Age	Ed.	IQ	Sex	Race	Time*
1	16	9	95	M	N	9"	17	11	91	F	W	3'5"
2	17	10	85	F	N	2"	17	8	91	M	W	2'9"
3	19	10	95	M	W	4"	19	9	97	F	W	2'2"
4	22	11	74	M	W	8"	20	11	85	M	W	3'5"
5	22	12	107	M	W	4"	22	12	115	F	W	3'5"
6	22	10	95	F	W	10"	23	16	106	M	W	2'3"
7	24	16	102	M	W	5"	23	12	105	M	W	3'2"
8	24	12	93	M	W	4"	24	10	79	F	N	2'9"
9	25	14	106	M	W	12"	25	8	82	M	W	2'2"
10	25	8	81	M	W	8"	25	14	121	M	W	2'8"
11	29	6	88	M	W	3"	25	7	72	M	W	2'7"
12	30	11	93	F	W	9"	28	16	111	F	W	3'9"
13	30	12	105	F	W	9"	29	12	95	F	W	2'10"
14	31	8	74	F	W	4"	31	10	75	F	W	5'8"
15	32	15	116	F	W	5"	31	8	85	M	W	8'7"
16	32	12	103	F	W	2"	31	12	96	M	W	3'4"
17	33	12	90	F	W	2"	32	12	91	F	W	3'4"
18	34	7	88	F	W	11"	35	14	100	F	W	2'3"
19	34	16	124	M	W	4"	36	12	108	M	W	4'5"
20	35	12	95	F	W	12"	36	16	99	F	W	2'2"
21	39	12	114	F	W	7"	37	12	94	F	W	9'7"
22	39	8	106	M	W	6"	39	10	106	M	W	2'3"
23	41	11	97	F	W	12"	41	15	95	F	W	2'6"
24	41	15	91	F	W	11"	42	10	86	M	W	3'9"
25	41	10	103	M	W	6"	42	12	104	F	W	3'11"

*Length of hospitalization; ' = year; " = month

APPENDIX B

WAIS SCORES OF CHRONIC SCHIZOPHRENICS

Subject	I	C	A	S	DS	V	DS	PC	BD	PA	OA	VS	PS	FS
1	8	11	7	9	9	9	9	7	6	8	6	53	36	89
2	9	10	7	7	10	10	7	8	7	9	5	53	36	89
3	7	11	8	12	10	9	7	10	8	12	8	57	45	102
4	12	8	7	7	7	9	8	2	9	7	9	50	35	85
5	11	16	13	13	14	13	10	11	11	12	11	80	55	135
6	13	9	10	14	11	11	6	8	13	15	11	68	53	121
7	11	9	8	9	9	11	8	11	11	11	10	57	51	108
8	6	5	4	4	12	5	7	6	7	12	6	36	38	74
9	7	9	5	10	1	8	7	7	9	6	11	40	40	80
10	15	19	16	13	9	15	10	12	15	14	8	87	59	146
11	9	10	0	10	4	8	0	4	10	0	9	41	23	64
12	13	11	12	11	12	12	13	11	12	10	12	71	58	129
13	9	11	7	10	11	11	8	11	7	8	9	59	43	102
14	5	9	5	5	9	6	6	7	5	4	7	39	29	68
15	8	10	5	5	4	7	6	9	9	9	13	39	46	85
16	13	13	7	10	9	12	6	10	7	9	8	64	40	104
17	9	4	7	12	10	9	10	9	9	10	7	51	45	96
18	11	13	10	12	6	12	7	8	8	9	10	64	42	106
19	11	13	10	11	9	11	8	9	14	11	12	65	54	119
20	13	8	6	12	15	13	7	8	7	6	9	67	37	104
21	9	7	10	10	7	9	8	9	10	8	9	52	44	96
22	10	12	10	9	8	13	11	10	10	10	7	62	48	110
23	12	10	10	10	7	10	9	4	9	7	10	59	39	98
24	11	13	12	8	10	12	4	3	3	5	2	66	17	83
25	12	8	9	12	9	13	8	10	10	14	8	63	50	113

APPENDIX C

COMPARISON OF MALE AND FEMALE ACUTE SCHIZOPHRENICS ON THE WAIS

	Female		Male			
Subtest	M	S.D.	M	S.D.	t	F
I	9.077	2.269	8.583	2.660	.481	1.375
C	10.154	3.718	10.000	2.887	.716	1.659
A	8.769	2.319	9.583	2.498	.793	1.160
S	10.307	1.435	10.583	3.068	.279	4.571*
DS	9.077	3.647	10.250	1.534	.988	3.422**
V	9.923	2.615	9.917	2.900	.016	1.230
DS	8.231	1.625	7.917	3.403	.286	4.384*
PC	8.615	2.058	9.333	2.055	.718	1.000
BD	9.538	2.373	10.000	3.055	.449	1.657
PA	8.077	2.702	8.167	2.911	.077	1.161
OA	9.462	2.977	10.917	2.753	1.357	1.169
VS	57.308	12.075	58.917	12.486	.315	1.069
PS	43.923	9.033	46.333	10.250	.599	1.171
FS	101.231	18.856	105.250	21.444	.479	1.293

*Significant at the .01 level.
**Significant at the .05 level.

COMPARISON OF MALE AND FEMALE CHRONIC SCHIZOPHRENICS ON THE WAIS

	Female		Male			
Subtest	M	S.D.	M	S.D.	t*	F*
I	9.615	2.528	10.750	2.203	1.144	1.317
C	9.538	3.104	11.250	2.889	1.366	1.154
A	8.308	2.554	8.083	4.007	.497	2.461
S	10.154	2.655	9.417	2.431	.692	1.193
DS	10.077	2.586	7.583	2.900	.689	1.258
V	10.077	3.626	10.583	2.216	.400	2.678
DS	8.385	1.777	6.750	2.712	1.722	2.329
PC	8.539	2.062	7.750	3.058	.736	2.199
BD	8.385	1.943	9.750	3.166	1.257	2.655
PA	9.231	2.662	8.833	3.869	1.013	2.081
OA	8.615	1.777	8.750	2.948	.134	2.752
VS	57.692	11.620	57.667	13.442	.032	1.338
PS	43.154	7.594	41.833	12.129	.316	2.551
FS	100.923	17.847	99.500	21.700	.173	1.478

*None of the t and F values are significant.

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APPROVAL SHEET

The thesis submitted by Bruce N. Christensen has been read and approved by three members of the Department of Psychology.

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the thesis is now given final approval with reference to content, form, and mechanical accuracy.

The thesis is therefore accepted in partial fulfillment of the requirements for the Degree of Master of Arts.

July 16 1963
Date

Paul J. von Ehrs.
Signature of Adviser